

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An electrostatic spray system installation comprising:

a vertical member having an elongate length and a transverse width and forming two outside surfaces along opposing sides of the length, the vertical member being positioned above a conveyed substrate such that the transverse width is aligned with an axis of travel of the substrate;

~~members and~~ parallel flow distribution modules made from non conductive materials that are coupled to the vertical member~~held in contact with each other~~, the parallel flow distribution modules are positioned ~~[[at]]~~adjacent to the two outside surfaces of ~~the~~ ~~[[a]]~~vertical member for providing continuous parallel sprays~~spray~~;

a conductive surface including a pair of charging strips, each strip being mounted to one of the two outside surfaces~~that is part of the vertical member and facing that faces~~ a flow distribution module and ~~[[is]]~~maintained at a voltage of a minimum of 20,000 volts, wherein each of the flow distribution modules is supplied by a controlled flow of a flowable material, and wherein the flow distribution modules can be given different dimensions and can be positioned to give various spray configurations; and

one or more target bars formed with a length oriented parallel to and spaced from the vertical member with the substrate conveyed therebetween, each target bar being maintained at a different electrical potential from that of the charging strips thereby defining to define~~one or more electrostatic fields, in which~~ ~~[[the]]~~ each target bar is~~bars are~~ separate from a catch tray and ~~[[are]]~~formed with a height having to have high parts and low parts, the high parts being spaced along the length to create distinctive electrical fields for providing continuous parallel sprays onto the substrate by attracting the spray towards the high parts and away from the low parts.

2. (Previously Presented) An electrostatic spray system as claimed in claim 1 wherein several rows of parallel flow distribution modules are positioned in between parallel members, and in which flow distribution modules can in addition be positioned on the outside surfaces of the members.

3. (Previously Presented) A system as claimed in claim 1 wherein a number of flow distribution modules are assembled to obtain a required spray length, in which different flowable materials are submitted to the flow distribution modules, in which the flow distribution modules have different dimensions, in which different flow rates are used for one or more flow distribution modules.

4. (Cancelled)

5. (Previously Presented) A system as claimed in claim 1 wherein the electrostatic field follows a contour in a curved plane, by shaping the main vertical member and flow distribution modules and by having a similar contour in the target bars.

6. (Previously Presented) A system as claimed in claim 1, wherein the flow distribution module contains a distribution groove that is directly connected to each of a number of smaller parallel grooves aligned in the direction of the electrostatic field and are distributed over the width of the flow distribution module.

7. (Currently Amended) A system as claimed in claim 1, comprising means for electrically insulating a flowable material supply system, ~~that can operate continuously~~, and that supplies the flow distribution modules with controlled flows of flowable material having conductivities greater than 7,000 pico Siemens.

8. (Previously Presented) A system as claimed in claim 7 wherein the flowable material supply system is heated by a hot gas or liquid.

9. (Previously Presented) A system as claimed in claim 1 wherein the members and flow distribution modules are heated by a hot gas or liquid.

10. (Currently Amended) A system as claimed in claim 1 wherein ~~the~~ ~~conductive surface further comprises at least one~~ each charging strip includes having solid thin conductive charge imparting parts covered by flow distribution modules.

11. (Previously Presented) A system as claimed in claim 10 further comprising a drip proof stop of a spray action obtained by the control of the flow to the flow distribution modules in two directions, to provide temporary reverse suction of flow.

12. (Previously Presented) A system as claimed in claim 11 further comprising a ground switch; wherein the drip proof stop of the spray is obtained by combining temporary suction of the flow to a flow distribution module with the quick removal of the high voltage from the charging strip by means of the ground switch.

13. (Currently Amended) A system as claimed in claim 12 wherein the system is configured for downward spraying and the drip proof stop is further facilitated by the location of the inlet of each distribution module below the feed line of the grooves that are aligned with the electrostatic field, ensuring the minimum of flowable material to be available for dripping.

14. (Previously Presented) A system as claimed in claim 1 wherein a precise stacked metering pump, driven by a precisely controlled motor, supplies a number of flow distribution modules over the length of a spray assembly.

15. (Previously Presented) A system as claimed in claim 14 further comprising outlet lines connected to the precise stacked metering pump, the output lines are provided with valves so that individual flow distribution modules can be supplied with flowable material or be disconnected from the supply, by diverting the flow from the outlet lines back to the feed tank.

16. (Previously Presented) A system as claimed in claim 1 wherein the flowable material is sprayed on a belt or roll which and subsequently transfers this material to a web of material to be coated with the flowable material.

17. (Previously Presented) A system as claimed in claim 1 wherein the flowable material is sprayed on a web, the web comprises two sides and the two sides of the web are coated by using two spray assemblies which spray downwards and through which the web is guided by rollers in an S configuration.

18. (Original) A system as claimed in claim 17 wherein the two sides of the web are coated by using two spray assemblies which spray downwards and through which the web is guided by rollers in an C configuration.

19. (Previously Presented) A system as claimed in claim 1 wherein the flowable material is heated when being sprayed, but then subsequently cooled with a cold gas such as cold air to provide a lower temperature of the flowable material when it reaches the target.

20. (Previously Presented) A system as claimed in claim 1 wherein the spray system with flow distribution modules is illuminated in the area on the lips where ligament flow occurs during spraying, and a vision system is used to count the ligaments.

21. (Previously Presented) A system as claimed in claim 1 wherein grounding switches are provided as a means to remove the high voltage quickly from the charged parts.

22. (Previously Presented) A system as claimed in claim 1 wherein said system is automated and controlled by a computer system.

23. (Previously Presented) A system as claimed in claim 1 wherein said system is preceded by a dust removal device such as a web cleaner, or a separate electrostatic device for dust removal.

24. (Previously Presented) A system as claimed in claim 1 wherein atomization by a gas such as air is incorporated.

25. (Previously Presented) A system as claimed in claim 1 wherein mechanical energy is used to affect the spray characteristics.

26. (Previously Presented) An electrostatic flow distribution and charging system, for the spraying of a flowable material by distribution and charging to a suitable high voltage and the spraying of the material by a multiplicity of parallel ligamental streams, wherein said system comprises:

an assembly of one or more insulated non-conductive flow distribution modules, said modules comprising grooves, a conductive surface with electrical connection to such surface, whereby the flowable material is electrically insulated in said system except for said conductive surface and electrical connection, means for application of an electrostatic field, one or more target bars to define the electrostatic field, and one or more catch trays, each groove being aligned with the direction of the electrostatic field, whereby:

the flowable material is sprayed with minimum loss from electrical currents through said assembly, the flow of material being distributed and guided through said grooves in the non-conductive flow distribution modules and over the electrically conductive part of said assembly substantially parallel with the electrostatic field, the application of the electrostatic field providing a positive force or pressure to move the material that is sprayed, through said grooves, the flow through each groove in a flow distribution module being substantially equal or independent of specific geometry of groove or module, to hydrodynamically distribute the flowable material to be sprayed over a length of a distribution module, while the flow to each distribution module is controlled separately so that long, multiple and shaped spray assemblies can be made with a precise distribution of flow, while different flowable materials can be used in sections of the spray assembly, and wherein the target bars that define the electro static field are separate from any catch trays and shaped to create different spray patterns.

27. (New) An electrostatic spray system installation comprising:

one or more vertical members, each having an elongate length with two outside surfaces formed along opposing sides of the length;

parallel flow distribution modules made from non conductive materials that are clamped relative to each other, the parallel flow distribution modules are positioned adjacent to the two outside surfaces of the one or more vertical members for providing parallel sprays onto a substrate formed of a non conducting material;

charging strips, each charging strip being mounted to an intermediate portion of one of the two outside surfaces of the one or more vertical members, each charging strip being oriented to face a flow distribution module and maintained at a voltage of a minimum of 20,000 volts;

sheets formed of a non conductive material, each sheet being disposed over a lower portion of one of the outside surfaces, wherein the charging strips and the sheets collectively space the flow distribution modules away from the outside surfaces of the one or more vertical members, wherein each of the flow distribution modules is supplied by a controlled flow of a flowable material, and wherein the flow distribution modules can be given different dimensions and can be positioned to give various spray configurations, and wherein the sheets extend beyond the flow distribution modules and the one or more vertical members for providing separate parallel sprays spaced 30 to 40 mm from each other; and

a pair of target bars oriented parallel to the one or more vertical members for defining electrostatic fields with the charging strips.